Rheumatic Fever.

A Study in private practice.

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Having myself, when a Student at the University in the winter of 1864, suffered severely from Rheumatic Fever and its attendant evils, I have since taken a little more than ordinary interest in the ailment. The following pages, are founded on part of my observations of 105 patients in my own practice, in whom the disease appeared for the first time, and in whom, so far as I could discover, the heart was structurally unaffected before the disease manifested itself. I have left out much as I found my paper likely to grow to an inordinate length. I have not dwelt on the subsequent histories of the adults, and my description is almost wholly from my personal observation of the disease, at the bedside of those patients.

With regard to the Pathology of Rheumatic Fever, it will perhaps be sufficient to merely enumerate the main theories which have been advanced by various eminent observers, before proceeding to more fully consider the points which have led me to regard it as an acute infective fever.

Chief among these theories is that advanced
I. by Todd, Richardson, and others, That there is an over accumulation of Lactic acid in the System, and that the rheumatic manifestations are due to its action on Special Structures in the body.

II. That a Chill acting on the periphery of the body, in some manner reacts on the Central nervous System and thus gives rise to the changes which ensue in the Structures involved. This is the theory advanced by Canstatt & others.

III. Senator advances the view that a Combination of these two, is the cause of the phenomena observed in acute rheumatism viz, That the accumulation or retention of Lactic acid, acts on the Central nervous System, the nerve centres reacting on the joints, and other parts involved.

IV. Fuller explains the phenomena by a Combination of the Second and first viz, that the nervous System being disturbed by a chill, causes the retention of Lactic acid, which acts as an irritant on the parts involved.

5 Wheeler maintains that Endocarditis is set up primarily, by the entrance of micrococci

into the Systems, and that the joint Symptoms are Imbolic.

VI. It is also maintained, that the manifestations of acute rheumatism, are dependent on the presence of a Specific vegetable organism, and finally

VII the theory advanced by Macalagan, that rheumatism is due to the presence of a poison of the nature of that causing malaria, but Specifically distinct from it. much careful thought as to the probable causation of Rheumatic Fever, has led me to regard it as most likely of an infective nature. The great want of unanimity among distinguished writers, and a careful examination of the various theories advanced and mentioned above, makes one naturally feel, that there is a Something more subtle awanting, to bring to Some semblance of order the very varied phenomena observed in Rheumatism and allied affections.

Fortunately, I Consider for myself, I have formed most of the ideas I had formed as to the probable nature of the ailment, admirably expressed by Dr Arthur Newsholme in the

in the Fourth chilvoy lecture at the Royal College of physicians, London. delivered in March. 1895, and reported in the Lancet of the 16th of march, of the same year, at page 661 et seq. For most of the language used in the following exposition of the factors which have led me to regard acute Rheumatism as an acute infective fever, I am indebted to that paper. I have myself noted throughout the course of my observations of the ailment, during the past 8 years, most of the features of the disease, which would induce one to regard it as of this type, but these are so well given effect to in his paper that I make no apology for closely following him in his arguments. These I have found it necessary to condense much, lest this dissertation appear too prolix, but the main points of analogy are expressed below.
The greater prevalence of Rheumatic fever in winter and Spring is shared in by several other Specific febrile diseases, and this in marked association with deficient rainfall. The Chief of these diseases are Scarlet Fever, Enteric Fever and Erysipelas. Deficient rainfall appears to provoke an

increase

increase in the prevalence of rheumatic fever, only where subsequent drying has produced a low level of ground water.

(I am not inclined from my own observations to go the whole length with Dr Newsholme, that we never find cases of Rheumatic Fever with a high level of ground water. My own cases have been noted in a district where, it has been rather unkindly said, 'if it is not raining, it is sure to be snowing'. The situation of the town, immediately under and partially on the slope of the Renfrewshire hills, with the river lying close up in front, may do much to assist in a speedy running away of excessive rainfall, but I am inclined to attach less value to the ground water element, than does Dr Newsholme.)

Further the clinical features of rheumatic fever, in several points present an analogy to certain specific febrile disorders. Its mode of onset, with shivering, general aching in the limbs, and feeling of general malaise, strongly points to the infection of the system with micro-organisms. The sore throat may be slight in degree,

it often is in Scarlet Fever, but it is an early Symptom in a great proportion of cases. In rheumatic fever it is probable, that the poison enters the System at some part of the naso-pharynx.
In Enteric fever, and in Cholera, the mode of infection is almost invariably by the alimentary Canal.
In Diphtheria, and in Scarlet fever, the poison may be implanted by inhalation, directly on the upper air passages, or may enter the System by the alimentary canal.
In the case of Erysipelas, it is matter for doubt, as to whether the poison has not reached the Specifically infected part, by the circulation, as do the micrococci in acute periostitis, or whether it is received at the Seat of injury; in the majority of cases of Erysipelas, an abrasion of some degree, being the point of inoculation.
The wonderful effect of Salicylate of Soda, or of Salicin, on some forms of Sore throat, where the arthritic affection is trifling, would point also to the destruction of an infective poison, which had become implanted on the parts.

The progress of a case of acute Rheumatism, resembles the Specific febrile diseases in many essential points. The continuous fever, the frequency of the simultaneous affection of the joints and viscera, and the protracted curve of the temperature, with the whole General aspect of the Sufferer himself, all point to an infective origin.

The tendency to Hyperpyrexia is shared by Scarlet fever, and puerperal Septic infection, while the frequency with which the endocardium is affected, strongly points to the work of an infective Specific Organism.

All the known diseases with which the implication of the endocardium is associated, are infective in nature.

The fever, it is true, has no definite duration as in Scarlet fever, Enteric fever, pneumonia and others, but this is due to Secondary Serous inflammations.

Relapses which are common, are not infrequent in Erysipelas; common in Influenza and Enteric Fever. Scarlet fever patients relapse sometimes, and I have had a reappearance of measles with profuse rash, within 3 weeks of the primary attack.

and that too in two Children of the same family, while a third member, who had the disease at the same time, escaped when her brother and sister were attacked for the second time.

With regard to the liability to second attacks, Rheumatic fever presents a strong analogy to Erysipelas, which strongly predisposes its subjects to subsequent injection.

Then, with regard to the influence of the personal equation, there can be no doubt, as is the case with the poison of Erysipelas, many more persons receive the poison of Rheumatic fever, than are seized with Rheumatic fever.

As regards the degree of infectiousness; Rheumatic fever comes last in the Group. Small pox, and Measles, stand at the head of the Group, as regards infectiousness, Enteric fever and Cholera, are only injections through the intestines, and Erysipelas only affects predisposed persons, and those in whom an abrasion renders the inception of the poison, possible.

Again, the deeper Structures are chiefly affected in Rheumatic fever, and we find

that

that the degree of infectiousness of various troubles, depends upon the exposure of the parts affected. The exanthemata are eminently infectious. Enteric fever in lesser degree, though the poison gains egress from the body by the bowels. The poison of rheumatic fever is however buried deeply in the joints, and it may never escape from them. That the joints are the chief location of the rheumatic poison. Strongly points to its infective origin.

The effect of treatment moreover, points strongly to the poison being a Specific one. The wonderful effects produced on the disease, by the Salicyl Group, is not merely that of antipyretics, and is only comparable with the Specific effect produced by Quinine on Malaria.

With regard to Dr Atkinsons remarks on the part played by Heredity in rheumatism I cannot quite agree. My experience has been so strongly in an opposite direction, and gained under circumstances which have precluded all possibility of doubt in the matter, that I have been forced to come to the conclusion that Heredity plays

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a by no means unimportant part, in the life history of rheumatic fever.

In the 65 cases of primary acute rheumatism in adults, and the 40 cases among Children & young persons, which form the basis of this paper, there were 21 or a per centage of 32.3 among the former, and 12 or an exact percentage of 30 in the latter, who had a distinct history of hereditary predisposition. Among the children I have had instances in which while articular rheumatism has been the pronounced feature of one member of the family's illness, another has been affected with Chorea, and Endocarditis with the appearance of nodules, while one or other, or both parents have had a distinct history of rheumatism, or demonstrable evidence of it. I have noted too, in certain families, the predisposition to certain ailments being paternal or maternal. In a family the boy who is said to resemble his mother most, developes rheumatic affections and enquiry elicits a clear history of a maternal diathesis, while of the same family those who favour the father most, (he never having had Rheumatism in any

form

forms,) are never so affected. and I am convinced that with regard to rheumatism, as with many other affections, there is an inherited predisposition to repeated manifestations of the disease.

With regard to the experimental evidence, adduced by researches in Bacteriology, as to the causation of Acute rheumatism, it may be noted that on the Continent, Weiss has attempted to use Serum in the treatment of the fever. Venesection is performed on persons who have recently passed through an attack of acute rheumatism, and used on those suffering from it. In some instances this has been followed by remarkable ameliorations of the Symptoms, and a Good recovery, but in the meantime Weiss is unable to claim a Specific curative effect from the treatment.

With regard to the possible nature of the infective agent at work in the disease Dr. Newsholme goes on to say "we incline to the view that Rheumatic fever is caused by a Saprophytic organism, having a tendency to assume a parasitic life: that in most

Cases.

only a Small proportion of these organisms survive to the Stage of parasitism, owing to the activity of their natural enemies in the Struggle for existence; but that in dry years associated with low Ground water and an optimum Soil temperature, the Growth of these organisms is favoured more than that of countervailing organisms, and an abnormally large number of them are released into the atmosphere in a desiccated condition and become parasitic in persons whose vital processes do not enable them to resist the invasion.

"We have Some difficulty in placing Rheumatic fever in its exactly appropriate place among the Specific febrile diseases, tho' of its claim to a place among them there can be no doubt. "Is it an infectious disease like Whooping Cough or Measles?" If So it has hitherto Succeeded admirably in concealing its true character. Direct infection, if it occurs, is exceptional — Is it a purely miasmatic disease like Ague? They may both be miasmatic diseases in the Sense that the virus is formed in the Soil, and is not transmissible

transmissible directly from patient to patient; or it may be miasmatic Con.: tagious like Enteric fever or Cholera. one phase of its existence being passed Saprophytically in the Soil, and the next in the human organism — It is impossible in the present State of our knowledge to be certain whether Rheumatic fever is due to an organism which is usually Solely Saprophytic, and only becomes parasitic when its habits of life are altered by the Stimulating effects of dryness and warmth of Soil; or to put it in another way, only migrates into parasitic life when extra corporeal food is deficient; and whether this organism after its rapid multiplication in the System is eliminated therefrom and Subsequently infects the Soil, or whether each case of the disease involves a fresh infection from contaminated Soil, we cannot at present State".

Causes predisposing to an attack.

Of the causes likely to predispose an individual to an attack of Rheumatic fever, there can I think be

little doubt that Heredity stands preeminently first. Among those with whom I have come in contact here, I have been much struck by the frequency with which acute rheumatism and Chorea occurs in the families of those, who themselves have manifested rheumatic affections. Among the 65 adults on whose illness this paper is based I have been able to trace an unmistakable family tendency in 21 or a per. centage of 32.3. while in the case of the children the per. centage has been exactly 30, or a mean per. centage in 105 cases of 31.8.

Age. From adolescence up to 30 years, appears to be the most frequent age for a first attack, tho' I believe, that had one the means of ascertaining all the cases that occur earlier in life, and which are so commonly overlooked, the proportion among young persons would be much increased.

Sex. More men than women appear to be attacked, but this seems in great measure to be due to out door employment, and the consequent exposure

exposure to weather conditions likely to engender an attack.

Social position too appears to exercise a not inconsiderable influence on the illness. Want, with its train of attendant evils, rendering its unfortunate subjects more vulnerable.

Locality, unquestionably plays an important part in the life history of Rheumatic fever. Certain districts are pre-eminently Rheumatic, and this not merely as regards their own inhabitants, but also as regards such newcomers as may have a predisposition to infection. Certain houses even, seem to exercise a peculiar influence, but whether this may be due to the poison which may have been given off from previous victims, or whether there may not be some peculiar influence connected with the soil, I am unable to offer an opinion.

Of causes likely directly to give rise to an attack of Rheumatic fever, exposure to cold and wet weather, stands in the forefront.

From early Autumn to early Spring one meets with the greatest number of cases, not that there are few in Summer, but there are fewer, and it has to be remembered that Chill is dependent not so much on the actual temperature, as on variations of temperature. Sudden chills are as likely to occur in Summer, and attacks of acute rheumatism are then, by no means uncommon.

Injury may be sufficient to determine an outbreak of rheumatic fever, and in connection with this it would appear, that the joints first attacked, are those which are most exercised, or those which at the time may be fatigued.

At the beginning of the present year, I was called to see a Gentleman, over 50 years of age, who had had an acute attack of rheumatism many years ago, and who was still troubled with it at times in a subacute form. When stepping out of a railway carriage, he had the misfortune to stumble, and fell on his outstretched hands. I found a subcoracoid dislocation of the right

humerus, which was reduced after some difficulty. The following day, he was suffering very much from a severe pain in the injured shoulder, which he himself described as of a rheumatic feeling. There was also some uneasiness in the right knee. I attributed his pains to the accident, and subsequent treatment, but the same evening, the knee pain was very acute, sweating profuse, temperature up, and he came through a 3 weeks attack of rheumatic fever. I am not just prepared to say that this was "propter hoc;" it certainly however, was a most curious coincidence.

Certain mental and bodily conditions, which have reduced the system below par: may also be considered as causes likely, in certain individuals, to determine an attack of acute rheumatism. persons coming through an illness of Scarlet fever, and women during the puerperal state or shortly after. Seem to be very susceptible of rheumatic fever.

Before proceeding to consider the Symptoms of Rheumatic fever,

it will be as well to glance at the morbid appearances presented in a case. For the following description I am indebted to Bristowe's "Theory and Practice of Medicine" 4th Ed. page 857. "The affected joints present hyperaemia of the Synovial fringes and of the parietal layer of the Synovial membrane, with excessive effusion of Synovial fluid into their cavities, and exudation of Serum into the soft tissues around. The former fluid may either still present the ordinary characters of Synovia, or be turbid, milky, or flocculent. On microscopic examination the epithelial cells of the Synovial Surface will be found swollen and plump, more or less fatty, and in some cases, converted into granule cells: and similar organisms, together with cells of pus, or mucus will be recognised in the Synovial fluid. Changes also go on according to Cornil and Ranvier, in the articular cartilages. These depend mainly on nutritive irritation of the cartilage cells, which swell up, assume a globular form and according to the usual routine, (Commencing with division of the nuclei.)

become filled with Secondary cells which speedily acquire Special secondary capsules. This condition does not involve the whole extent of the cartilage, but occurs in scattered spots, which when they implicate the surface, reveal themselves to the naked eye by their prominence and comparative softness. Striation of the hyaline matter of the cartilage frequently attends this process: and as this is mainly vertical in its direction, the cartilage may sooner or later acquire a velvety character. Rheumatic inflammation rarely results either in suppuration or in permanent disorganization of the parts affected. — The effects of rheumatic inflammation discoverable post mortem in most other fibrous tissues liable to be affected, are yet more trivial than those just described, and need no Special consideration:

Symptoms. The Symptoms presented at an early Stage, are generally slight. The onset is, as a rule, Gradual, and may bear some resemblance to Influenza. Most usually there is a vague aching in the limbs

and body Generally, A feeling of being out of sorts, with loss of appetite; Chilliness; Some sore throat; and it may be darting pains in the joints, accompanied by Some Stiffness. There may be a rigor, or Simply the feeling of a chill. The thermometer indicates one or two degrees of fever. After a variable time, the more striking and constant Symptoms Speedily develope. Profuse Sweating makes it's appearance. The cheeks are most likely flushed, and there is very frequently a dull heavy expression of Countenance, with the Complexion Somewhat Sallow, and in Some cases Slightly jaundiced.

The Sufferer lies motionless. There is no tossing about. His eyes express his dread of movement no less than his apprehension of too rough handling.

The Sweat is acrid, and Sour-Smelling - in fact the Smell of Such a patient is almost pathognomonic of his complaint. One joint or Several, or all the larger joints, may be complained of. To himself, they feel burning, and exquisitely painful to touch, or on movement. While at rest the pain is frequently of a peculiar Sickening, Gnawing character.

He dreads the least movement of his bed, and friends' steps through his room, are at times agony to him. Even the weight of his bed-clothes, he can hardly bear. He is afraid to cough, and his whole aspect betokens a fear, that is revealed in no other febrile illness. There is complete loss of appetite. Drinks are his sole craving, and he complains of feeling miserably ill, and indeed looks it. The bowels are irregular; as a rule constipated at first, but this may alternate with diarrhoea. The tongue is foul, and is covered with a thick creamy fur which in severe cases, may have the the tip and edges red. The pulse is weak, quickened in rate, somewhat full, and may be dicrotic. Respiration is sometimes quickened, and shallower, than in health. So far as his mental state is concerned, he is perfectly alive to his condition, and his chief desire is to give his painful joints complete rest. The urine is scanty, high coloured, and deposits an abundance of lithates. It is also very acid. The skin is warm, and owing to the profuse sweating, sudamina are frequently present.

Sleep in the early Stages he does not enjoy, and should it come, he is frequently awakened by painful startings or twitchings of the muscles, which not infrequently, as I myself can testify from Some personal experience, make the Sufferer dread his again falling over. The pain in the joints does not however remain long where it was primarily located. It flits about from joint to joint and those which Suffered at night are tolerably free from pain in the morning, while it has settled in another, or in others, it may be at a Considerable distance from its last location. There is no regular Sequence so far as joint implication is concerned, nor is there much Consolation for the patient who congratulates himself on his pain having left Some particular joint, as a very Short interval of relief may See its return, with apparently increased Severity. Almost all the larger joints may be thus involved; either once, or time and again. There is no definite period to the cycle. After a variable time however, it would appear as if the poison had expended itself.

to-peak joints are attacked; the inflammatory mischief gradually subsides, the parts remaining however, for a time stiff and painful on movement. The appetite improves. The bowels become more regular, sweating ceases, the temperature falls, and the patient is himself sensible of a very much improved condition. He becomes more cheerful, and with the disappearance of all that characterized his miserable plight he more or less rapidly makes for health. There is still however a very considerable risk of relapse, and he who has once suffered from an attack of acute rheumatism, soon becomes alive to the stern necessity of keeping such a guard over himself, as will be least likely to render him again a victim to a most relentless enemy.

In considering the Symptoms a little more in detail, we find that the early Stage of an attack of rheumatic fever resembles somewhat the early Stage of one of the infective fevers. The premonitory Symptoms may be present for several hours or for two or three days. There is a

a feeling of general malaise. The patient is somewhat feverish, with a creepy, chilly feeling. The appetite is gone, and he sleeps badly at night. He has muscular uneasiness, or actual pain, with more severe twinges in one, or several of his joints. His bowels are irregular, and his urine is scanty and high colored. His throat somewhat sore. He has in fact all the appearance of having a severe catarrh. The shooting pains become however more localized, and finally settle down in particular joints. In my own case, while I felt out of sorts for a day, I could not say that there was anything specially the matter with me. I was disinclined for food and somewhat languid. My throat felt a little "peppery" and I did not care for much exertion. On the evening of the second day, altho' I was feeling pretty miserable, I proceeded in a drenching rain to an examination in the "Andersonian" where I was then attending Dr. Samson Gemmell's lectures on medicine. I foolishly sat with a wet overcoat on, and when returning home, was seized with an intense pain in my right knee, which completely prevented me

walking for a minute or two. It bothered me a good deal during the night. I had no sleep until early morning. On the following day the pain had centred itself in my right wrist, which was very much swollen red, and exquisitely painful. That was the beginning of a 5 weeks' illness.

Temperature. During the early Stage the thermometer usually registers one or two degrees of fever, and when the disease has fully declared itself, it may range about 102° or 103° F. or even 104° F. without any untoward result. Although an uncomplicated case, it is of the remittent type. The initiatory rise is more sudden than the decline, and there are rises and falls throughout, as fresh exacerbations of the trouble occurs, and as these again subside. Fever does not however, as a rule, run high. Complications, I have frequently found influence the temperature a little. It falls as the acuteness of the illness passes off, and may range a little above normal for some time, until convalescence is thoroughly established.

Skin. The condition and activity of the Skin are among the chief characteristics of Rheumatic fever. During the early Stage, it does not present the remarkable features it displays, when the disease is well established. Then Sweating is most profuse, and is a Source of much discomfort to the Sufferer. In the Great majority of cases, it appears to bring little relief. It is General, and the patient is literally bathed in perspiration. It is acrid, and Sour-Smelling, which appears to be due, not to any abnormal products but rather to Subsequent fermentative changes which take place in it. Sudamina are very frequently present, and miliaria. The vesicles at first clear, when their contents Give an acid reaction to litmus paper, become milky in appearance later, and are Surrounded by a faint red Zone. At this later Stage, their Contents are neutral, or faintly alkaline. Sweating persists throughout the illness, Gradually abating as the acute Symptoms Subside. The sweating, profuse though it be, does not Give rise to any Complaint of increased weakness, indeed

some express a feeling of relief, when it is profuse. Sometimes the sweats are absent from certain parts, whilst others are bathed in perspiration. As a rule the more severe the joint affection, the more profuse is the sweating.

The affected joints are swollen, red, and exquisitely tender, while their temperature is found to be actually raised above that of the surrounding parts. There is usually a considerable amount of effusion into the joint, but I have never been able to detect fluctuation.

Pain is as a rule, very severe, and in some cases, is actually agonising. It appears to increase up to a certain point, remain steadily at that for some time, and gradually subside again. After the acuteness has passed away, a considerable amount of tenderness, and soreness remains. With abatement of the pain, the swelling also diminishes, the effusion becoming absorbed. Pain is a rule worse at night, but its acuteness, depends in no small degree upon the temperament of the sufferer. A to doubt, want of rest, or disturbed rest, make the pain

appear

appear worse at night, but the Complaint is one which makes a patient peculiarly irritable; and as joint after joint becomes affected it is rather uncommon to find its victims bearing their misfortunes with Christian resignation.

There is no particular order in which the joints are affected, nor does there seem to be any special reason why one joint is attacked in preference to another. Some it is however, that the larger joints are those which are almost invariably attacked first and it would appear as if injury, either recent or remote, had some influence in determining the seat of pain in those who have contracted the disease.

The pain in many instances shifts from one joint to another, either up or down the same limb, while in others the corresponding joints in both limbs are attacked. While I myself suffered severely in the worst of the commencement of my illness, it was not until the 3rd week that my fingers were affected, and that in conjunction with the Temporo-maxillary joints.

Painful twitchings in the muscles are

of

of frequent occurrence, and a dull sick-
ening pain in the whole limb, is frequently
complained of. Pain in the fascicæ, and
in the insertions of muscles, is not un-
usual, and when the illness has de-
clined the muscles remain weak for a
long time afterwards.

Respiration is somewhat increased in
frequency, and there may be some cough, and
the breath sounds heard on auscultation, may
be a little harsh, or ronchi may be present.
More severe pulmonary complications are
not uncommon.

The sore throat is in many cases charac-
teristic, and severe tonsilitis may be
present. In some of those I have attended
suppuration, was a distressing part of the
earlier stages of the illness.

The pulse is as a rule, full and regular,
but as cardiac changes so frequently com-
plicate a case of acute articular rheumatism,
there are many variations in the pulse
rate and tension.

The urine is scanty, and when the fever is well
marked, there may be some albumen present.
Urea is much increased, and though uric
acid.

uric acid is present in large quantity, this is only relative, owing to the large amount of water that is given off by the Skin. The chlorides are diminished, or may be absent. The urine never contains an excess of Lactic acid.

The tongue is covered with a thick creamy fur, which in Severe cases, leaves the edges and point, red. Appetite is completely gone, and taste is almost wholly abolished. Thirst is complained of much, and in Some cases, the tongue becomes dry and cracked. Dyspepsia is common, and there is frequently a good deal of abdominal uneasiness with flatulence. The bowels are irregular, Constipation, I have found most common in first attacks, but this may alternate with Diarrhoea.

Delirium is uncommon, unless in the presence of Severe complications. Mental anxiety however, as the disease progresses, or relapses occurs, is very marked. The weakness resulting in an attack of rheumatic fever is frequently extreme, and a long time generally elapses before the Sufferer regains even moderate good health, and

anaemia is as a rule very marked.

Rheumatic fever runs no definite course. Under [illegible] treatment, as advocated by Sir William Gull, and Dr. Sutton, the average duration has been estimated at 9. days. but under appropriate treatment, it is as a rule rather shorter, and is apt to run a very much longer course, if neglected. The entire duration of the illness is much longer, and increases with the age of the patient up to middle life, and generally extends to some weeks. Convalescence is apt to be tedious, and a long time generally elapses before the Sufferer is again restored to perfect health. Very marked anaemia is often present, and in some cases desquamation of the hands and feet, occurs, and a general shedding of the cuticle in some instances.

The vast majority of those suffering from an attack of acute rheumatism, recover; the proportion of deaths occurring from the disease 'per se' being only about 4 p.c. or rather less. — But the trouble is one associated with such important changes in the heart and elsewhere, that a very large number

of —

of persons are afflicted with permanent disablements, which ultimately lead to death. Acute diseases of the respiratory organs, are the foremost among the immediate causes of death in an acute attack of rheumatism. Acute pericarditis is also frequent as a cause of death, but it seems doubtful if a patient ever dies of the disease per se: it out to acute pulmonary and Cardiac disease, comes Hyperpyrexia as a cause of death, in an acute attack, while delirium and acute alcoholism, in some instances, contribute to a fatal issue.

The remote consequences are of vastly more importance, than the immediate effects of an attack of acute rheumatism. The most common result is Valvular disease of the heart, which in the majority of cases, results from an Endocarditis, occurring as part of the rheumatic infection. It would be a task indeed, to attempt to determine the diseases which result from the derangement produced in the heart; diseases of Kidneys, Brain, Lungs, Spleen and Blood-vessels. We have also the remote effects produced by pleurisy, and pneumonia arising as com-

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complications of acute rheumatism. The blood vessels are also, undoubtedly affected by the rheumatic poison. In many instances the disease leaves a tendency for the joints to pass into a Chronic State, and finally there is engendered the liability to a Second attack with all its' disastrous complications.

The most important Group of so called complications, Consisting as it does of Cardiac and pulmonary inflammations, Erythema, chorea, meningitis, must be Considered as having a Genetic relationship to Rheumatic fever. Their frequency during a rheumatic attack; the analogy which exists between the parts affected in Some of them and the joints; the Comparative rarity of Some of them, independent of the rheumatic State; the changing character which they present, alternating with each other at one time, with the joint inflammation at another. Their occurrence at times before the joint affection manifests itself, or it may be, without it; the effects of antirheumatic remedies on them, and their occurrence during an acute attack as part of a General disease, all indicate the —

the Genetic relationship, and point to an infective cause.

Cardiac Complications. These are by far the most frequent of the complications of Rheumatic Fever, and are found in fully 50. per cent of all cases. The percentage of acute cases is however said to be much less than this, being about ⅓rd, the remainder being Chronic, or Chronic and acute cases combined. In addition to inflammatory disorders of the heart, we must take into consideration the functional derangements which ensue in an acute attack, and which declare their presence by abnormal physical Signs — distress over the precordium, and palpitation.

Cardiac inflammation occurs pre-eminently in the rheumatic affections of Children, and early Youth. The tendency to heart changes diminishes with advancing years, the liability rapidly declining after 30 years.

The liability to heart implication increases with the Severity of the attack. Women suffer more from heart derangements than men.

Neglect of the trouble, with improper, or no treatment at all, renders the Sufferer pe-

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peculiarly likely to have inflammation of the heart structures. Cardiac complications most frequently make their appearance in the first week of the illness, and unfortunately in a large proportion of cases, especially in children, they are developed before medical aid is sought. Later development is by no means infrequent and I have discovered valvular lesions long subsequent to an acute arthritic attack when I was certain the heart had escaped implication. The presence of heart derangement exercises a most important bearing on the course of rheumatic fever, and is the paramount source of anxiety during the progress of the case.

The Respiratory System suffers frequently, about one in every 9 or 10 being variously affected. Pleuro-pneumonia, Pleurisy, and pneumonia are of frequent occurrence and a large proportion of the immediately fatal cases, are directly attributable to these.

Hyperpyrexia does not fortunately, make its appearance often during an attack of rheumatic fever. It generally appears early, and is ushered in by a complete abatement of

of the articular pain: cessation of Sweating delirium and flushing of the face.

In May of 1895 I was called to see a man act 31. who was stated to be very ill. He was under the care of another D who was from home and who I had not seen him for two days. I found him sitting propped up in a chair with his legs upon another. The left knee was much swollen and exquisitely tender, as were also the right wrist and elbow. He was suffering from Rheumatic fever. His temperature was 103·4° F. He had never been ordered to bed, and indeed preferred to be up, hence his appearance at the kitchen fire. He complained now of great oppression over the heart. On auscultating there was a very loud, harsh pericardial rub, which indeed was marked when the hand was applied over the part. The apex beat was above and considerably to the left of the nipple, and the whole action of the organ was extremely tumultuous - I applied 4 leeches over the heart and gave him a full opiate. In the evening, the heart was much quieter and the articular pain less. He had a good night. The following morning when I visited him

along with his own Doctor, he complained of being very "funny" as he described it. Later in the day the articular pain was gone. His expression was bright. Cheeks flushed, and only a moderate amount of sweating about the head and face. His temperature was 107° F. He fell into a comatose condition, and died in the evening. The patients' surroundings precluded the possibility of adopting such active measures as the circumstances demanded, but I was of opinion that there was also Pyo-Pericard-itis present.

Chorea is the most important of the nervous complications and as we have before noted, really appears to be but a manifestation of the rheumatic State. Delirium is infrequent in uncomplicated cases; a certain amount of wandering during sleep, is common enough in children with acute rheumatism, but so little seems to disturb the nervous System in children, that there is really nothing terrible about the delirium in acute uncomplicated rheumatism.

In confirmed dram-drinkers one frequently meets with delirium which appears to be really "delirium tremens."

Kidney complications are not of frequent occurrence, albuminuria in ordinary cases being almost unknown. Chronic renal and cardiac diseases will of course give rise to it, and it may also be present, when we have the attack associated with Scarlet fever. Skin affections sometimes make their appearance during an acute attack of rheumatism and sometimes they precede it. Notable among these are Erythema nodosum, and the condition known as "purpura rheumatica", which is most frequently confined to children. Peritonitis as part of the rheumatic infection is almost unknown.

Scarlet Fever and rheumatism are frequently associated, and tho' this may in many cases be accidental, I had a curious case in May of the present year. A married woman, act 34, was subject to occasional sub acute attacks of rheumatism. She had never had acute rheumatism and her heart was perfectly sound. Two years ago, she nursed her 3 children through an attack of Scarlet Fever, the youngest, about 18 months old at the time and whom she was nursing, not contracting the disease until 3 weeks after the other two.

She herself had not had Scarlet Fever, nor did she contract it at the time of her Children's illness. At the beginning of May. She had a sharp attack of rheumatic fever, and had some sore throat. The arthritis was limited chiefly to the lower limbs, but the fingers suffered a good deal. There were no nodules present so far as I could discover. The temperature never rose above 102.6°F. The acuteness had almost passed away, when at the beginning of the 3rd week, her throat got much worse. She was heavy and sick and quite disinclined for food. The rheumatic pains were scarcely at all aggravated tho' her temperature rose to 104° F. I was at a complete loss to understand the fevers, when to my relief, a profuse Scarlatina rash made its appearance on the 2nd day. The scarlet fever ran its course, and there was no further exacerbation of the arthritic symptoms. She made a good recovery and there was no heart implication. The two older Children were removed from the house & the youngest who was left in the house did not have a

a second attack. The family had removed in the preceding November from the house in which the children had had Scarlet fever, to the house next on the same landing. Two years ago we had no compulsory notification of infectious diseases in Port Glasgow, and householders were left to disinfect, pretty much as they liked.

At the outset Rheumatic Fever is most likely to be confounded with Catarrh, or with Influenza, though one rarely meets with the amount of frontal pain in Rheumatism in the early Stage, that is so pronounced in an attack of influenza. If sore throat be present, with much aching in the limbs, the danger lies in regarding the ailment as Catarrh, to the exclusion of the more serious malady. It is this insidiousness in many cases, that renders careful examination of young persons of such vital importance. We must enquire into previous Rheumatic attacks, slight or otherwise; family tendency, and exclude other possible ailments, by a careful consideration of Symptoms, present,

or absent. Above all, in young persons, we must carefully examine the condition of the heart. When the joint Symptoms are pronounced, we have still to consider the possibility of other affections, such as Pyaemia, acute Synovitis, or arthritis other than rheumatic.

Gonorrhoeal rheumatism in older persons; Scurvy in very young children; Infantile palsy in which there may be marked hyperaesthesia; Syphilitic disease of the bones; and Tubercular disease affecting the ends of the bones.

Three years ago, I was called to see a boy, 13 years of age, who was being treated, his mother informed me, for rheumatic fever, but with no improvement in his condition. He was visited, she said, becoming much worse. I found the boy with a temperature of 104° F. little sweating, and suffering from acute periostitis of both femora. He was removed to hospital. This boy had been thrashed the night before by a drunken father for skulking the School.

pyaemia may be mistaken for rheumatism; here however the sweating is intermittent, it is not sour smelling, and is much more debilitating. The condition is associated with previous injury or surgical disease, and the fever remits. The joint affection, which does not flit about may go on to suppuration & symptoms of blood-poisoning ensue. Syphilis and Tuberculosis will reveal their presence by other symptoms, while Scurvy occurs at an age when acute rheumatism is almost unknown.

In infantile palsy there is a flaccidity present in the limbs which serves to distinguish this affection from rheumatism.

Treatment in Adults.

General. Few febrile diseases require such an expenditure of tact and skill, on the part of those entrusted with the nursing, as does rheumatic fever. Where practicable, it is essential that the patient should occupy a room the hygienic arrangements of which are perfect. The bed should be a firm hair one, preferably on a spring mattress, and readily approachable

from either side, and to minimise the discomfort that arises from the profuse sweating, it is recommended, that the blankets should be laced between the sheets, so that there is one above, and another underneath him.
It is more comfortable however, and as beneficial, to place a light blanket underneath him, with a sheet above him.
His night dress should be of flannel, reaching quite to the feet, and should be split completely down the front, and arms, and secured with tapes, so that there may be the least disturbance possible during examination and to facilitate as much as possible, the application of such local remedies as may be called for.
It is of the utmost importance also, that arrangements should be made for the patient passing stools and urine in bed, but unfortunately, in private practice this is one of those points, that very many persons cannot be made to understand the importance of, and a frequent cause of relapse.
Rest is the first essential in the treatment of a case of rheumatic fever.

Cotton wool may be wrapped round the affected joints, and secured with a flannel or ordinary calico bandage applied with moderate firmness. This at once secures fixity of the joint and constant warmth, which is often of singular effect in itself, of relieving the articular pain. The wool, if sweating is propent must of course be frequently renewed, and the joint may be sponged with a warm alkaline solution, before the wool is reapplied.
In severe cases, especially where there has been a tendency to painful startings in the muscles, I have applied splints to the affected limb, and I must say, with considerable alleviation of my patients' sufferings.
Careful dieting of a rheumatic fever patient, is a matter of no light moment in the progress of the case. Though resembling that recommended in other febrile complaints, there are several important points which require to be emphasised. Errors in diet are among the most frequent causes of relapse, and to prevent reflection, it is important that at the

outset

the medical attendant should lay down stringent rules to the nurse, as to the dietetic course to be pursued. No great difficulty in the early acute stage is encountered, so far as the patients' objections are concerned, but when convalescence appears near, it is harder to convince him of the necessity for curbing his increasing appetite.

The Diet must be non-nitrogenous. A too early return to solid food, and especially the giving of butcher-meat, is a very prolific cause of relapse. In acute rheumatism, more than in most other febrile diseases, the system is loaded with waste products, and the powers of the digestive organs are very seriously impaired. So long as the symptoms are acute, small quantities of milk with an alkali, or with an alkaline waters, such as Soda, Vichy, lime-water, or potash, should form the chief part of the dietary, and in addition a little beef tea, chicken soup, or mutton broth, may be allowed in some cases. It must be remembered, that the heart may be seriously affected by the addition of much fluid, or solid material to the blood. Consequently

it is of the utmost importance that the Quantity given at once should be strictly limited. Two or three ounces every hour, or every two hours are better than double the Quantity at longer intervals. For the relief of thirst aerated water may be taken sparingly, and the addition of lemon-juice and ice, do not seem to be harmful, and certainly prove very grateful. A considerable Quantity of these drinks may thus be consumed in the 24 hours, and serve the important purpose of diluting the poisonous materials in the blood, and at the same time compensating the System for the great loss of fluid by sweating.

A pint of milk, diluted with a pint of boiled water, and containing 30 or 40 Grains of Bicarbonate of Soda, and 10 to 20 Gr. of common Salt, and cooled with a lump of ice, proves an exceedingly pleasant mixture, and of this, the Sufferer may have a small tumblerful now and again. He may thus take 3 to 4 pints of milk in the 24 hours, and with it he is having a considerable dose of alkali. Should diarrhoea be present, milk and lime-water

will prove a useful combination. With decline of the fever, and mitigation of the acute symptoms, vegetable soups, bread and other farinaceous substances may be allowed, also gruels, arrow root, corn-flour, sago and malted foods. As he progresses, the patient may have a little fresh white fish, boiled, sweetbread, or a little chicken, and this should prove his dietary until all symptoms have been absent for several days.

With regard to alcohol, my experience has been that in many cases, it does harm, and I am exceedingly chary about ordering it. A feeble pulse, with some irregularity may induce me to have recourse to the aid of alcohol, but among the class with whom I have had chiefly to deal, viz. the ordinary middle class of workmen, I have had better results, or as good, as one could look for, without the use of alcoholic stimulants.

Should stimulants be resorted to, the quantity should be strictly regulated, and its effect upon the heart's action carefully watched.

In cases of marked heart failure, alcohol is imperatively indicated, and must often be

given

in liberal doses and repeated as required.

When pain is very severe, and simple means have failed to bring much relief to the sufferer, he must have recourse to anodynes. Opium and its various preparations, Chloroform, Aconite, Belladonna &c. may be applied. We may apply strips of lint soaked in a lotion of Tr. Opii, with bicarbonate of Soda, and hot water, or the joints may be lightly rubbed with the following liniment and wrapped up in wool again.

℞. Liniment. Aconiti
" Belladonnae,
" Chloroformi
" Sap. c. Opii. āā ℥vi
M. Terebinthinae ad ℥iv to

The patient may find the application of extreme heat to the joints, very grateful at the time, but it is very injudicious to gratify his desire for a constant renewal of this. Weiss speaks highly of Bouchet's method of using Salicylic acid in an ointment about the inflamed joints. This generally consists of Acid Salicylic,
Terebinthinae
Lanolin āā ℥ii ℔s
Adipis, ℥iv ℔i

This is placed upon the joint, and rubbed in as vigorously as the pain will allow, and the parts are then bandaged with flannel.
With regard to the application of Blisters. it has been claimed by the late Dr. Davies, who introduced the treatment, that the poison is removed in the Serum, pain lessened; the duration of the disease shortened; and visceral complications minimised.
Modern methods of treatment are however, so much more efficacious in the great majority of cases, that one seldom cares to run the risk of producing Strangury.
Where other means have failed however, or where the pain is excessive, or where it threatens to become chronic, a blister, applied for a few hours, might in these circumstances prove of benefit.
Whittle Speaks highly of Dr. Watkins (of Dublin) plan of applying a large blister over the heart, so soon as the disease declares itself, which, he says, causes a most remarkable amelioration of the Symptoms.
Internal Remedies. First in importance among medicines, Stand the Salicylates, Salicin, and Salicylic acid.

"The introduction of these remedies, has greatly shortened the course of the disease, and indirectly thereby, no doubt, has led to an important diminution of visceral complications, and even where such have already developed before treatment was begun. Salicin tends greatly to reduce the permanent gravity of the lesion.

It is a question, how much importance, should be attached to different endocardial murmurs, when they appear in the course of rheumatic fever. Absolute rest, with Salicyl compounds will, I believe, prevent many permanent lesions, which would otherwise occur, and this by the power they possess, of lowering the action of the heart, and reducing vascular tension.

"The Salicyl group will disagree with some persons, and may produce a train of symptoms, which compel us to discontinue their further administration. — Sickness, pain in the Stomach, and vomiting sometimes occur; buzzing in the ears, with deafness, dimness of vision, and great cardiac depression, are of more serious import and demand their suspension.

Relapses under this treatment are not of more frequent occurrence, than with other remedies. The great and speedy relief obtained in some cases, leads to injudicious license, and a return of the joint Symptoms is not infrequent in these cases. Salicylate of Soda, or Salicin itself, I have found to be the best for ordinary cases. The insolubility of Salicylic acid, renders it less preferable. Very frequently I administer the Salicylate of Soda – in doses of from 15 Gr. to 25 Gr: with Gr ii or Gr iii of Sulphate of Quinine, and I have had every reason to be satisfied with the combination. Beyond singing in the ears, I have never had any untoward Signs which have led me to discontinue its administration. When the joint Symptoms have abated much, I omit the Quinine and slightly diminish the dose of Salicylate, which is continued for several days after all pain has disappeared, provided that there are no Serious Cardiac Signs to contraindicate its further administration. Salicin, which Maclagan himself prefers, is not so depressing as the Salicylates,

but unless in considerable doses, I have not found the relief of the pain, so marked, or speedy, as when the Soda compound has used.

Dr. P. B. Latham, in the Lancet of Jan.y 19th 1895. p. 157. points out that there are 3 causes of failure in the administration of Sodium Salicylate. Viz.

I. Insufficient doses at the commencement:

II. The non-administration of purgatives, such as Calomel.

III. Feeding with Substances other than milk- viz. Beef tea, Broths &c especially in the earlier Stages. The preliminary administration of Calomel, followed if need be by Salines, he considers the best adjuvant to the use of Salicylates. When the Salicylates produce nausea or vomiting, he recommends the combination with Ammon: Carb. or Spiers effervescing with Soda Ricarb: & Acid. Citric: or with lemon juice. Should nausea still persist, Salicylic acid may be administered in pill, but as he points out, the pills are hardly Soluble in the Stomach, and pass into the duodenum before Solution is effected.

Strachard, in the New York Medical Journal, of Jan'y 12th 1895, recommends the administration of Sod. Salicylas, in large quantities from the beginning, but in divided doses, which should be continued after the pain has ceased. It thus, he says, prevents Cardiac complications which come on earlier than is commonly supposed. He advises the continuance of the remedy for at least 12 days, after the disappearance of pain. He does not regard albuminuria as a contra-indication to its administration, but where the albuminuria precedes an acute attack - where due to a renal lesion, to nephritis, compromising more or less, the permeability of the organ, he considers it to be contra-indicated.

Its administration to pregnant women, he says requires careful supervision. It must always be taken in a concentrated form.

Salicylate of Soda must be given freely diluted with water, and can be well taken in a small tumblerful of the milk and Soda mixture. In many cases, chiefly of a subacute nature, the

the combination of Sod. Salicylas. Gr. 10 - Gr. 15, with Gr. 5. of Dover's powder. I have found of marked benefit, and even in acute cases where pain has been very severe, and when unwilling to resort to the hypodermic Syringe, I have found the or two doses of the Combination (with a somewhat larger dose of Opium) of great value.

Cases will occur however in which the administration of Salicin or of Sodium Salicylate, has after a fair trial, of 2 or 3 days, produced no benefit, and then we must adopt other means to combat the disease.

Alkaline Treatment.

The treatment of acute rheumatism by alkalies is one which unquestionably proves of the greatest benefit in many cases, and though objections have been raised against it for producing untoward depression of the heart, it is one which may with considerable advantage, be combined with the Salicin treatment. Alkalies, in sufficiently large doses, are given until the urine is rendered alkaline. The salts generally administered are the

Carbonates. Acetates. Citrates, and Tartrates. And we must remember that it is possible, and indeed probable, that these salts, may by their action on the blood, prove of the greatest efficacy in preventing cardiac complications. As Dr. Burney Yeo, in his "Clinical Therapeutics" Vol. II. Page. 464. points out "too little attention has been paid to the remarkable fact, that the venous blood in acute rheumatism, is rarely capable of inciting endocarditis, the endocardium on the right side of the heart, enjoying almost complete immunity from inflammation. The explanation usually put forward to account for this, viz. the greater functional activity of the left side of the heart, is obviously wholly inadequate. The conditions are practically the same, on the two sides of the heart, save that on the right side, the endocardium is in contact with venous blood, and on the left side, with arterial: and it must also be borne in mind, that the right side of the heart, does not invariably escape.

It would seem then, that there is some substance in the blood, in this disease, which

after it has been brought under the influence of the atmospheric oxygen in the lungs, is rendered capable, or far more capable than it was before, of exciting in certain circumstances, inflammation of the endocardium. The remedy therefore, which would protect the heart, would be some agent, which when added to the blood, would prevent this effect of the respiratory oxygen upon the toxic substance in it, until it has been eliminated or destroyed. Alkalies may probably act in this way."

Alkalies may be administered then, until the urine is rendered alkaline, and this effect maintained as long as the arthritic symptoms show themselves. It is maintained for this method, that there is soon a wonderful amelioration of the symptoms - pain speedily ceases, and the temperature falls, while the whole duration of the disease is much shortened, and visceral complications reduced to a minimum.

To be effectual, the doses should be large. 3ss xxx of potass. bicarb, in water or effervescing with Acid. Citric, and repeated at intervals of 4 hours - or it may be given with

Potass. Acetas. (in the same dose) where a speedy effect on the system is desired. and once the urine becomes alkaline, continued in smaller doses. I have found the combined treatment with Sodium Salicylas and Quinine, and potass. or Soda. bicarb. of extreme efficacy in most cases. The patient may have the potass. or Soda water in Syphon, or in the Lazogene, and I encourage them to drink a good quantity of these, while he is having in his milk, which some prefer hot. fr xx or more of Soda or potass bicarb, and a few grains of Sodium Chloride.
The hot milk, I have not found to increase the sweating much, and it appears in many cases, when the stomach is somewhat irritable, to do much better when taken thus.
The presence of Diarrhoea would contra-indicate the administration of alkalies.
Garrod, in his 'Treatise on Rheumatism' recommends the giving of Potass. bicarb in 20 grain doses, every 2 hours, night and day. Combined with Quinine - which is thus given in the form of a Carbonate, while Yeo advocates the combination of Sod. Salicylas. fr 20 with fr 30 of potass. bicarb. in

in 2 oz of water, every 2 or 3 hours, and made to effervesce by the addition of a dessertspoonful of lemon-juice, or 5ss to 3i of citric acid, and when the temperature falls, reducing the dose of Salicylate to 5ss to 10, administering the mixture at intervals of 5 or 6 hours when the urine has become affected (page 466. Clinical Therapeutics. Vol. II.) My results have been so encouraging, that I invariably begin treatment with the combination of the alkali & Salicylate & Quinine, and very rarely indeed, have I found it disagree with the patient. The buzzing and singing in the ears, is no doubt produced much sooner, but I have very seldom found any other disagreeable effect from the combination, and even where almost complete deafness came on during the course of treatment, I have very rarely, had to discontinue the drugs. The deafness speedily disappears when the dose is diminished, and I have never had an objection on a patient's part, to resume the treatment when a relapse has unfortunately occurred. Careful attention to the bowels, is an important part of the treatment, and in

most cases a full dose of Hunyadi Janos, with morning ensures a free movement, and frequently adds much to the benefit experienced by the sufferer.

Where there has been much uneasiness at night, or where the patient has complained of headache, I have frequently given a single large dose of phenacetin - 5ss to 10 - 15 - at bedtime and with excellent results. I have never used Antipyrin, preferring phenacetin, as being less depressing.

In exceptional cases I have given Opium, to relieve the pain and produce sleep, but prefer to give it as already mentioned, in pulv Doveri.

Treatment of Endocarditis.

As soon as we are persuaded of the advent of Endocarditis, Salicylate of Soda should be discontinued. So far as the Cardiac complication is concerned, the drug does not appear to possess much curative efficacy, and its' further continuance may seriously depress the heart's action.

Dr Maclagan however, maintains, that there is not the same objection to Salicin, and should the joint Symptoms still persist,

to any great extent, we may continue its administration even in the presence of endocarditis.

The heart must be kept as far as possible, at rest, and the patient must be warned to avoid all anxiety of mind, and excitement of any kind. To let the sufferer know however too much as to our own anxiety at this time, is injudicious. And very likely to produce the very frame of mind we wish to avoid. When I lay ill myself, I well remember my medical attendant, Dr J. Ewan Brodie - saying "now you must not excite yourself in any way as your heart is a little weak, and you must rest quietly, lest some permanent mischief result." I know I should never have worried myself as I did, until his next visit, had I never heard of his anxiety.

To allay any cardiac irritability that may be present Tinct Digitalis, or Belladonna, are the best remedies. Should the temperature be much raised, I prefer the use of Quinine Cardiac failure must be met with the administration of alcohol, preferably brandy, or of Ammonia.

Pericarditis, though seldom directly the cause of immediate death, is very apt to be followed by the formation of adhesions, and the inflammation may penetrate deeper, and seriously affect the muscular walls of the heart. We must accordingly, so soon as it has declared itself, adopt such active measures as will allay the inflammatory process.

The further administration of the Salicyl compounds should be stopped. Absolute quiet and rest in the recumbent position should be enjoined, and as recommended by Professor Bartholow ("Practice of Medicine. page 237.) the administration of a full dose (Gr. 15 to Gr. 20) of the Sulphate of Quinine, with Gr. ¼ to Gr. ½ of Morphia, and the Cinchonism maintained by Smaller doses for 24. hours or longer. Blood may be abstracted locally. Provided the patient is of good Strength and has a good history. An ice. bag may be applied over the heart, or if preferred, continuous heat, by means of fomentations medicated with opiates, poultices, or a mustard plaster. Pain in the praecordium may be relieved

by morphia subcutaneously, which affords much relief also in quieting the heart's action. Where signs of heart failure develope, Digitalis and Brandy or Ammonia are urgently called for. To facilitate absorption of the fluid, small blisters over the heart or the application of Iodine, with the internal administration of Potāsʃ. Iodide, and Digitalis are the best means at our disposal. Should the effusion increase rapidly, or should reabsorption appear to be at a stand. Still, the question of Surgical interference must be considered.

Should Pyo-pericardium result, and the presence of pus having been demonstrated by the insertion of a fine exploring needle, an incision, having its centre two inches to the left of the Sternum, should be made along the upper border of the 5th or 6th rib - whichever intercostal is the more prominent, Careful dissection is carried down to the pericardium, which is carefully but freely incised, the pus allowed to drain away, and a drainage tube left in the wound. Strict antiseptic precautions must be taken to ensure that no serious complications result.

"Hyperpyrexia" Hyperpyrexia appears to occur more frequently in Rheumatic fever, than in any other febrile condition. Antepyretic remedies appear to be of little avail, and this alarming condition, must be combated at once by means of the cold bath. The patient should be kept in it until the temperature has fallen 5 or 6 degrees, and the presence of visceral complications must not stand in the way of our only chance of saving a life. It must be repeated as often as it appears to be called for, and should the sufferer have to be removed from the bath, before the temperature has declined much, the immersion may have been sufficient to cause it to drop somewhat for some time afterwards.
The more rapidly heat can be abstracted the better, and there is thus less subsequent depression, hence it is a good plan to add ice to the bath as it becomes heated. An ice-cap should also be kept applied to his head while in the bath. Where facilities for bathing are not at hand, ice packing, and rubbing the body over with lumps of ice will always do much toward off a fatal issue

Stimulants will be required to combat the after collapse which always comes on.

A patient who has come through a sharp attack of rheumatic fever, must for a considerable time afterwards exercise the greatest care of himself. Smoking should be interdicted, and for the resulting anaemia which is so marked a feature of convalescence from rheumatic fever, Iron with Quinine and Potash, should be continued for a considerable time. For considerably over two years I took a mixture containing Iodide of Potass. with Potass. Bicarb, Vin Colchici and Tr. Cinchonae, and that with considerable benefit. For this suffering otherwise, I have never, even when out continuously in the most boisterous weather, had more than a passing pain to remind me of my old enemy.
Warm flannel underclothing is imperative, and I never have recommended Alcohol in any form as likely to bring up the System.
The Syrup of the Iodide of Iron may with advantage be combined with Cod. liver oil and is of much value to some convalescents, who as a rule however, require to be treated each on his own merits.

Rheumatic Fever in Children.

When we come to consider the rheumatic affection in Children, we find many anomalies as contrasted with the manifestations of the disease as met with in adults.
Rheumatic affections are of very common occurrence in Childhood. The joints are very frequently attacked, but the fibrous tissue of other structures suffer as well, and we find as a rule that the joint affection is subsidiary to the rheumatic manifestations in other situations. Indeed, as commonly seen in children, it would appear at first glance, as if the trouble consisted in an acute manifestation of serious cardiac or pulmonary affections, or nervous affections, with the arthritis as a complication of these.
The heart disease we meet with in Childhood, and in after years, is almost invariably the consequence of endocarditis as part of a rheumatic infection. That acute rheumatism is uncommon in very early life is open to question, as it is a by no means rare experience to discover evidence of heart derangement, generally at the mitral orifice, in young children, where no suspicion of such

a condition, has ever occurred to the parents. The joint symptoms are seldom well marked in infancy, but enquiry generally elicits the fact, that at some time, with a slight amount of feverishness, the child showed marked tenderness when handled, a fact which combined with a possible history of parental tendency, almost assuredly points to a rheumatic seizure.

With regard to the frequency of rheumatic fever among the sexes. The reports of the Collective Investigation Committee show, that in the first period from 1 to 5 years of age — boys preponderate in the proportion of 5 to 1. In the next quinquennial period from 6 to 10, they become nearly equal, in the proportion of 15 to 14. In the next period of 11 to 15 years, there comes a change. The girls suffering in the proportion of 2 to 1. After the age of 15, the greater liability of girls declines up to 20 years, so that at the close of this period men preponderate.

Heredity plays a most important part in the life history of rheumatic fever, as manifested in childhood, and I have found in private practice the knowledge I have had of parental

parental weakness. Stand me in the greatest stead, when called upon to deal with what appeared but a trifling derangement: but which eventually proves of the most desastrous nature.

Double inheritance proves a very powerful predisposing cause of a rheumatic outbreak, and the worst cases I have met with, have been in those, whose parents have each had rheumatism in some form or other. A previous attack of rheumatic fever strongly predisposes to further attacks. Indifferent health, and any cause likely to render the child more liable to chill, such as dentition; diarrhoea - or mucous catarrh either bronchial or intestinal, is a very frequent predisposing cause of a seemingly rheumatic outbreak.

The chief characteristics of the rheumatic state in children, is the erratic fashion in which we find the various parts affected. The arthritis is as a rule at a minimum in childhood. The various heart affections are most pronounced, together with Chorea, and the appearance of subcutaneous fibrinous nodules, and the

Erythematous manifestations. We may find an arthritis followed by endocarditis, or pericarditis; or we may ~~find~~ have Endocarditis as the prominent part of the affection. Or Chorea may first show itself with a subsequent arthritis; or Chorea alone.
In fact, we have the disease in Childhood, following no regular rule.
When arthritis is present, there are the same appearances in the joint structures, that are found in the case of adults. The Synovial membrane is inflamed. There is effusion into the parts around, this effusion being frequently milky, but Suppuration in the joint is of rare occurrence.
The pericardium, when affected becomes Softened and red. Lymph is poured out on the Serous surface, while there is an effusion of fluid into the cavity. The amount of fluid varies much, and is sometimes present in considerable quantity. It may be clear or be tinted with blood, and sometimes it becomes purulent. The lymph similarly varies much, and sometimes the two layers are united by bands, and adhesion between the opposed surfaces of the Serous membrane frequently

occurs when the absorption of the fluid is complete. This may prevent the development of the heart in proportion to the growth of the rest of the body, with the subsequent death of the child.

The morbid appearances within the heart, are generally confined to the left side. The valves are thickened and soft, and become granular on the surface. Outgrowths from the fibrous tissue of the valves develope, and these are found to be precisely similar in structure to the tendinous nodules, which are found subcutaneously in various parts of the body. In the heart these are usually limited to the auricular surface. The chordae tendineae also become covered with granulations. Subsequent contractions prevent the proper closure of the valves, and the opening may become narrowed.

These fibrinous deposits, are liable to be washed away in the circulation and give rise to embolism in distant organs.

Symptoms of an attack.

The child if old enough to make its condition known, says it is not well. It complains of chilliness, and does not

incline for play. It wants to be nursed, or sits over the fire. He sometimes is sick, and may complain of sore throat. He feels one or more joints sore, or if he make no complaint as to this, he may walk in such a fashion as to draw attention to his affection, or may hold his arms in a manner indicative of uneasiness about one or other of the joints.

Having remained thus for a variable time, he prefers to remain in bed, and when the medical attendant is called, his temperature is found somewhat elevated, it may be one or two degrees. Fah.t His skin is warm and moist but there is an absence of the profuse sour smelling perspiration which is such a marked feature of the complaint in the adult. The tongue is more or less covered with a creamy fur. There is marked thirst, and the mother informs us that he will have no food, simply drinks, drinks.

The urine is scanty, high coloured, and deposits an abundance of lithates. The bowels have been irregular, and there is generally a history of constipation. Frequently we are informed that he has been speaking in his sleep, but his rest has been much disturbed

by pain, which has caused him to have fits of crying. He has the appearance of being in pain, and his countenance may look worn, and haggard. His joints are inflamed and have a pinkish blush, while handling produces much suffering, and he evidently regards our approach to his cribe with considerable apprehension. The pain increases but does not assume that intensity presented in the adult. His limb, is as a rule comparatively easy, while he is at rest, and the amount of swelling does not seem to bear any relationship to the pain he suffers. The larger joints, the knees, hips; the elbows, ankles, and wrists are most usually affected, and where the toes and fingers have been implicated, I have found this to happen only late in an attack, or perhaps earlier, if the illness be other than a first one. As the first joint affected, recovers, the pain, as in the adult, shifts to others. It does not as a rule, remain long in one joint and the duration of the inflammatory process, is much shorter than in later life; the attack, so far as its articular manifestations are concerned, passing away in a day or two.

It may all pass away in Several hours, or we may have one of the larger joints affected for a very short time, while the disease is working havoc elsewhere. The poison may however, attack the joints one after another, returning to those it has already visited, time and again, and present many of the characteristics it possesses in after life. Relapses are very common, but observation strongly inclines me to the belief that in early life the fibrous tissue about the joints in children, forms a less suitable soil for the injection, than does the same tissue in other situations, notably that of the heart.

It is no unusual thing, to find such pain as is present limited, not to the joint, but to the tendinous fascia near; or the pain may be referred to the muscles themselves, which causes a stiffness in the limb. This may be the only indication as to the nature of the ailment, while the Stethoscope reveals active mischief in the heart. The articular affection, while doubtless distressful to the little sufferer, is, as a rule of trifling moment in itself, and seldom provokes any serious consequences. The heart implication, is what is dreaded, and the

awful frequency with which it follows upon trifling joint Symptoms, makes Rheumatic fever one of the most dreaded of Childrens ailments.

Implication of the fibrous Structures of the heart, must be regarded as an integral part of the rheumatic process, and cannot be looked upon Simply, as a complication.

Fortunately, cases do occur, in which the heart is not involved, but these are few. Just as the rheumatic infection may reveal itself in certain joints to the exclusion of others; or while the Symptoms point to the nervous System, so the heart may escape; but in early Childhood, we unfortunately find the tendency to be for the heart to be implicated, while the joints escape.

Dr. Charles West, in "Diseases of Infancy and Childhood", p. 553, States that in 4 cases of pericarditis; 58 of Endocarditis, and in 24 in which both the pericardium & Endocardium, were involved, making a total of 87 out of 140 cases, or in 62.1 p. cent., Rheumatism was either Certainly known, or alleged on Good Grounds to have been the Starting point of the mischief, and in a foot note, he States, at the Same page

Dr. Roger's estimate of the frequency of rheumatism as a cause of heart disease is "78. per cent".

There is as a rule, nothing striking in the symptoms which point to the advent of the rheumatic implication of the heart, and its covering. A child may be up, and going about, with almost nothing the matter with his joints, and only his listlessness and apparent distress, without complaint, have caused his parents to have medical advice. The temperature indicates not much the matter. There is no palpitation or breathlessness which might have guided the parents. Sooner and it is only on physical examination that the important changes within his chest are revealed.

In the great majority of cases, where joint symptoms are not pronounced, a child will not present any marked features which would draw attention to cardiac derangement, tho' he look ill, and be somewhat indisposed for exerting himself.

Cases there are however, where the distress is at once observable. With anxiety depicted on his countenance, lividity, breathlessness, and great restlessness, he presents an appearance

which at once draws attention to his distress. There is usually general oedema of the body, slight as a rule, puffiness of the face, or brain symptoms may predominate.

Friction accompanying the Sounds of the heart, is the first indication of the onset of pericardial inflammation. This is best heard at the base of the heart, and is double; the Systole and diastole being accompanied by a scraping Sound, which gives the impression while listening, of coming from a point nearer to the ear than the Sounds of the heart itself. Some cases present much difficulty in discovering whether the Sound is peri- or endo-cardial. Pressure intensifies the pericardial murmur however, and unlike endocardial murmurs, it is not distributed along the blood current. The pulse rate is increased, but the temperature is seldom much affected.

Anaemia is generally well marked. An endocardial murmur usually mitral, may make its appearance now, and Subcutaneous tuberculous nodules may develope over some of the bony prominences. These are of grave augury as indicating Lesions

implication of the fibrous structures of the heart. The pulse remains rapid after the disappearance of the friction sound, and effusion dullness, and is unaffected by treatment. The sounds of the heart are muffled, Emaciation and anaemia proceed apace, and the child ultimately dies exhausted.
Effusion may lead to adhesion between the pleura and the pericardium, or between the opposed surfaces of the pericardium, which would give rise to hypertrophy.
The fluid may become purulent, instead of being absorbed. In such cases the temperature is raised to 103° F. or more. Pain is complained of in the precordium, and the sufferer looks very ill. Such cases prove almost inevitably fatal unless the fluid is drawn off, and so soon as pyo-pericardium is discovered immediate Surgical intervention is demanded, if the little Sufferer is to have a chance at all.
Another serious class of cases is where Pericarditis occurs late, and where there has already been Endocarditis or Pericarditis.

Endocarditis. No internal signs mark the

advent of Endocarditis, and the valvular lesions is only detected by physical examination. In Children, as a rule, Endocarditis comes on in an insidious fashion, and as before remarked, it may be early or late, in making its appearance in the course of acute rheumatism, but usually it comes early, and thus stands in marked contrast to pericarditis which as a rule makes its appearance late. Endocarditis may be present with Arthritis, or with fibrous nodules, or with Chorea, or with any or with all of them, and it is by no means rare, to find valvular lesions already present in a child who is supposed to be suffering from Rheumatic fever for the first time.

Valvular derangement of the heart is thus vastly more common in Children than in adults, and it is this insidious tendency of the rheumatic poison to work mischief on the cardiac valves without any local articular evidence as to the danger that lurks behind an apparently trivial illness, that makes early recognition of the trouble so important. And yet, do what one may, even in an early stage, we often, very often find ourselves impotent

be present structural changes, which will blight a whole life.

Changes in the heart sounds, with an altered, uneven action of the heart, are the first signs met with on auscultation. The most frequently marked sound, is a soft systolic murmur at the apex, over the mitral area, accompanied by a reduplication of the pulmonary second sound. Reduplication of the second sound at the apex, caused probably by inflammatory adhesions preventing the proper closure of the mitral valve, is also of frequent occurrence, and with this a blowing systolic murmur with increased accentuation of the first sound, early indication of mitral stenosis, which is of no infrequent occurrence and due to rheumatic fever.

Mitral regurgitation is however, most frequently met with, and of course the Aortic and Tricuspid valves, are subject to similar changes.

A presystolic murmur frequently escapes detection in early life, and becoming marked later, is apt to be overlooked as being of true rheumatic origin.

Some palpitation may accompany the valve changes, and also an increase in the pulse rate, but as a rule these are not present, while the child rests in bed.

Endocarditis and pericarditis, may occur together, and the valvular lesion may not be detected until the pericardial inflammation has subsided.

Ulcerative Endocarditis may occur in connection with the valve changes - Vegetations may be swept away, off the valves, and block the small arteries in distant organs. Ulcerative Endocarditis is however of rare occurrence in children. When present, the symptoms are of the nature of those met with in Pyaemia or in continued fever, & generally prove fatal.

Inflammation of the Pleura with effusion is not infrequently met with in Children, & may be concurrent with inflammation of the pericardium, or may arise by extension of the pericardial inflammation.

In the Summer of 1891. I made a post-mortem examination in connection with Dr. Barr, of this town, on a boy who was reported to have died suddenly. There was a distinct

history of the boy having had shortly before, pains in his knees and ankles which for one or two days prevented his running about as usual. He was 4½ years old, and the child of very poor parents, was not so well cared for. He found very considerable effusion in the left lung, with a small amount in the right lung. There was also a considerable purulent collection in the pericardium, and how the child was able to run about as he had been doing at the time of his death, was matter of no small wonder to us both.

Pneumonia occurs frequently, and a considerable extent of lung is usually involved.

Of implication of the Peritoneum, during an attack of acute rheumatism, I cannot speak, but two years ago I had a puzzling case in a girl, act 9 years, who within a fortnight of a slight attack of rheumatic fever, developed peritonitis. There was marked distension with extreme tenderness, a temperature ranging from 101·5° F in the morning, to 104° F in the evening, obstinate vomiting with the haggard expression of countenance which points to severe abdominal mischief.

The heart's action was very tumultuous and I could not well satisfy myself as to the presence of any special cardiac lesion. She continued very ill indeed for two days, when purpuric spots appeared on the chest and abdomen, and also a few on the limbs. She took an obstinate haemorrhage from the back of the throat and died collapsed within 2 hours. There was no appearance of membrane about the throat, and to this day, I am puzzled as to what went wrong, unless it was a rare combination of post rheumatic peritonitis and ulcerative endocarditis.

Subcutaneous Tendinous Nodules, are a manifestation of the rheumatic State which is not infrequently met with in children and are usually of grave augury so far as visceral complications are concerned. These were first described by Hillier in 1886. Subsequently by Sherpet; but we are indebted to Drs Barlow and Warner, for the fullest description of these in "Transactions of the International Medical Congress, Vol. IV. pp. 116-128.

These vary in size, are painless, and appear either in crops, or in succession

and persist for periods, varying from a few days up to several months. They are present generally over bony prominences, and are attached to tendons, deep fascia, or the pericranium. They are met with in children and young adults, in rheumatic fever, purpura, and exudative erythema. "They are so characteristic" (says Dr Stephen Mackenzie, in the Edinburgh Medical Journal, for Feby. 1897.) of rheumatism, that they are a connecting link in the chain of rheumatic events. Moreover they are especially associated with the graver forms of endocarditis and pericarditis, and are thus not only of diagnostic but of prognostic significance. When found with any one of the phenomena claimed as rheumatic they clinch the diagnosis."

The following conclusions are given by Drs Barlow and Warner, concerning their presence.

I. "That subcutaneous nodules having such a life history as we have described, truly conform to the general type of rheumatic inflammation, especially in their spontaneous tendency to subsidence, more or less complete, and in their proneness to relapse.

II. That they may be considered as in themselves indicative of rheumatism, even in the absence of pain.

III. That when associated with Chorea and Heart disease, although no antecedent history of rheumatic fever can be obtained, nevertheless, their presence gives a presumption that the Chorea is rheumatic.

IV. That in regard to prognosis and treatment, although the nodules are unimportant in themselves, they are nevertheless of serious import, because in several cases the associated heart disease has been found actively progressive.

V. That such nodules belong strictly to the fibrous tissues, and in nature are probably homologous with the inflammatory exudation which forms the basis of a vegetation on a cardiac valve."

I have only once discovered nodules in a person up in years. At the beginning of the present year I was called to see a man of 45 who had had an attack of rheumatic fever some years ago. He had Aortic Stenosis with Mitral Regurgitation. I found him with right hemiplegia — On the palmar surface of the right hand, at the metacarpo-phalangeal joints of the index & middle fingers there were 2 small nodules and on the left hand at the same parts of the ring & middle fingers there were others.

the improved wonderfully under Iodide of Potass, and Bromide of Ammonium and in two months resumed his employment as a Gatekeeper. The nodules disappeared within a month, and except for a slight weakness in the leg and hand, he says he is in as good health as ever he was.

The Connection of Chorea with the rheumatic State in Children is matter of very common observation and very frequently makes its appearance as the rheumatic affection is passing off.

The duration of the illness in children, varies much. In many cases the joint affection subsides in a day or two, but in others the disease is apt to run a very protracted course, and especially so in Children of parents, who have the rheumatic tendency strongly accentuated in themselves. It is in those mild cases that we find the endocardial changes come on so insidiously, and it is never safe to consider a child who has suffered, even mildly, from articular rheumatism as secure from cardiac implication before the lapse of 8 or 10 days, or even longer.

Relapses are of frequent occurrence, and

and Children, who have come through an attack of rheumatic fever of moderate severity, may complain for long, of muscular uneasiness, and stiffness in the joints, not severe enough however to lay them aside. Such children, are generally badly nourished, anaemic, irritable and nervous, a condition we find associated with acidity and fermentation.

Diagnosis of the trouble.

When the articular manifestations are well marked, as in the adult, there is generally little difficulty in diagnosis. The flitting nature of the pain is characteristic of rheumatism. "Growing pains" are such a frequent explanation on the part of mothers, that one has to carefully enquire into the possible and probable likelihood of such being something of much more serious import. Nothing but frequent and careful examination of the chest, can satisfy one fully as to the likely nature of the case, with which one is dealing, but unfortunately, when the symptoms are but mild, it is common experience to find parents averse to the frequency of a doctor's visits, which seem so unasked for.

It is one thing for such cases to be carefully watched in the families of those who can be made to understand the importance of the vigilance exercised, and that, without exciting unnecessary alarm, but with those in humbler positions, it is often very different indeed.

The same difficulty does not present itself among the poor, as frequency of visit to them is only limited by the time at one's disposal.

Friction-Sounds over the precordium, with an increased area of cardiac dullness, in a child who looks ill, would almost assuredly indicate pericardial inflammation. High evening temperature, with complete morning remission; the disappearance of pneumics, without diminution of the effusion, and the child's appearance, would assuredly indicate, with general oedema, that the effusion had become purulent.

Pleurisy, is not uncommon, and the presence of effusion, may mask the accumulation of fluid in the pericardium.

The significance of endocardial murmurs, cannot be determined accurately as a rule, until sufficient time has elapsed for the

structures to have so far recovered themselves. but where the murmur has been preceded for some time, by prolongation of the first Sound, it is extremely Suspicious.
A blowing murmur at the apex, with accentuation of the pulmonary Second Sound, is almost certain to be one of mitral insufficiency, and assuredly is if transmitted to the angle of the Scapula, and accompanied by a Small, weak, irregular pulse.
Time lengthens the murmur, and consequently if we hear Such a rough murmur at the apex, high in pitch, we may safely conclude that it dates from an antecedent rheumatic Seizure. Endocardial murmurs frequently disappear, and one must hesitate in forming an opinion as to the gravity to be attached to their presence.

Prognosis in Children.

The prognosis, as regards the immediate issue of an attack of rheumatic fever in a child, is as a rule favourable. We should however, be extremely Guarded in Speaking too positively as to his ultimate well-being. The occurrence of Endocarditis, or

or of Pericarditis, may not at the time excite any great anxiety in our minds, as to the course the illness is likely to run, but much more depends upon the effects these are likely to produce, and we should accordingly, be exceedingly chary about giving any opinion at all, in the presence of any complication. The previous State of the Child's health; the factors of previous illness, and the Child's surroundings are points which must weigh heavily with one, in any attempt to give an indication of probable events.

Even in the apparently most favourable cases, accidents which it is impossible to foresee, and the possible occurrence of embolism with sudden dissolution at any time, are among those dangers, which must ever be before our minds.

The remote effects of rheumatic fever, upon the heart, are points for more serious consideration. As mentioned before, some endocardial murmurs disappear, but to give a definite opinion as to the effects the illness may have produced upon the heart, it is important that the Child be examined from time to time, after the immediate effects of

his illness have passed away.
Where Subcutaneous nodules are developed in any part, and in any number, it is a sure sign that the cardiac Structures are irremediably damaged.

Treatment. As in the adult it is advisable that the affected joints should be wrapped in cotton-wool, and secured with a firm bandage; and it is also a good plan to envelope the Chest of a young child who may be affected, in wool also. Any pain should be lightly considered, and absolute rest must be enjoined. The bowels should be freely cleared out with Calomel, and the administration of Salicylate of Soda begun without delay.
I have benefited much in my treatment of Children, by the advice given by Dr. Chas West, in his "Diseases of Infancy and Childhood" page. 810. where he says "In any case of fever of doubtful character, I am accustomed to give at first the Citrate of potash with small doses of Aconite, and of Salicylate of Soda, every 3 hours, and so soon as the

the rheumatic character becomes pronounced, to lay aside all other remedies, and to give Salicylate of Soda alone every 2 hours, or even every hour until distinct relief is obtained." By following this advice, though I generally omit the Aconite, I have in one or two cases saved much valuable time, and in a manner forestalled the more serious results of what ultimately turned out to be rheumatic fever. I have always found Salicylate of Soda agree extremely well with Children, and have very seldom had to discontinue the remedy, except where Cardiac complications have manifested themselves to any alarming extent. I have found it best to combine the Salicylate of Soda, with an alkali, preferably the Citrate of Potash or Soda, and in some cases, where the temperature runs higher than usual, adding Quinine to the mixture Gr vij to Gr x of the Salicylate with Gr j or ij of the Sulphate of Quinine and Gr viij to Gr xij of the Citrate to a child of 6 to 8 yrs.

Should this appear to disagree, Salicin, will as a rule do well. As the articular affection is the least important part of the illness, and results, I am convinced from my own ob-

servations

are likelies to follow when an alkali is given.
The articular pains, under this plan, I have found disappear in a few hours in some children, while in others, where the seizure has been very severe, 2, or at most 3 days, see an end of the joint symptoms.
Bicarbonate of Soda. I give as in the case of adults, in the milk, and under this treatment combined with the most perfect rest, and a diet of the lightest kind, - milk and a little broth or mutton soup. perhaps. (and not much of the latter) I have had results, and under apparently the most unfavourable circumstances, (for Port Glasgow, is not an ideally clean town) which have been exceedingly gratifying.
Should pain be very severe, or sufficiently bad to prevent sleep. 2 or 3 Gr. of Pulv. Doveri at bedtime is a useful adjuvant to the treatment.
When the temperature falls, and the pains abate, we may reduce our doses somewhat, but perfect rest should be enjoined for some days, and we should never be in a hurry to increase or to vary the dietary much.

Directly Signs present themselves that the Pericardium is involved, I have been in the habit of applying Cold, and should there be marked irritability of the heart, or much distress present Opium either in the form of Tr. Opii or Pulv. Doveri, have in my hands proved most Satisfactory.

I have never resorted to Leeches in Such cases in Children. Stimulants in the form of Brandy, may be called for, and must of course be carefully given in doses proportionate to the Child's age. Blisters may also be resorted to instead of the Icebag, and in two cases of young persons, who were under my care, and where there was severe Pericarditis with considerable effusion, the results were extremely good. Where the effusion is considerable, full doses of Potass Iodide with Iron, will yield good results, and will seldom be found to disagree. When absorption is complete, tonics will be called for to combat the anaemia which is generally such a marked feature of the disease in Children. For Children of 11 or 5 Years. I generally give.

Syr. Ferr. Iodidi. ℥vi
Glycerini ℥iv
Syr. Hypophosph. Co. (Fell:) ℥vi
Syr. Aurantii ℥iv
Aq. Aurantii ad ℥viii

℞. ℥j ss aq. ℏ ter die post cib.

Absolute rest has a wonderful effect on the heart's action, and permits of the re-absorption of such inflammatory products as may have affected the valves. Where these become organized, the inevitable result is permanent disablement.

As in the adult should the exudations become purulent the question of Surgical interference must be considered if there is a chance at all for the little sufferer being benefited by an operation. After convalescence is established, the child should be removed to a dry, warm, country side, and tonics persevered with. He should be kept warmly clad, and should wear flannel undergarments to minimize the risk of his becoming permanently crippled by his illness. Heart tonics may be required for a time, and Iron and potash should be continued.

For the physician's own satisfaction, frequent examinations of the heart should be made, and an unexpected but agreeable surprise is not infrequently his reward for the pains thus taken.

Notes on Cases. 65 Adults. 40 Children.

Monthly occurrence of the Disease among Adults.

	Jan.	Feb?	Mch	April	May	June
1889	.	.	.	.	.	.
1890	1.	.	.	.	.	.
1891.	2.	1.	1.	.	1.	.
1892	1.	.	.	1.	.	.
1893	1.	.	1.	1.	.	1.
1894	1.	1.	.	.	.	1.
1895	.	1.	.	.	.	1.
1896	1.	.	.	.	.	.
1897	.	.	2.	.	.	.
	7.	3.	4.	2.	1.	3.

	July.	Aug.	Sept?	Oct?	Nov?	Dec?
1889.	.	.	.	1.	2.	1.
1890	1.	.	.	1.	3.	4.
1891.	.	2	.	.	3.	2.
1892	1.	.	1.	.	4.	1.
1893	.	.	1.	.	2.	.
1894	1.	.	1.	2.	.	.
1895	.	1.	.	.	1.	3.
1896	1.	.	.	1.	2.	1
1897.	1.	.	.	.	.	.
	5.	3.	3.	5.	17.	12.

Monthly occurrence of the Disease among Children.

	Jan?	Feb?	Mch	Ap.	May.	June	July	Aug.	Sept	Oct.	Nov	Dec
1889.	.	.	.	.	.	.	.	.	.	.	2.	.
1890.	.	1.	.	.	.	.	.	.	.	1.	1.	.
1891.	1.	.	1.	.	.	1.	.	.	.	2.	.	1.
1892.	.	.	1.	.	.	1.	1.	.	1.	.	.	2.
1893.	1.	1.	.	.	.	.	.	.	1.	1	.	1.
1894.	.	.	.	.	.	.	.	.	.	.	2.	1.
1895	.	.	1.	.	.	.	.	.	.	2.	1	1.
1896.	2.	.	.	1.	.	.	.	.	1.	1.	2	.
1897.	1.	1.	.	.	1.	.	.	.	.	.	.	.
	5.	3.	3.	1.	1.	2.	1.	0.	3.	7.	8.	6.

Ages of Adults.

17 · 20	20 to 25	25 to 30	30 to 40	40. +
19.	22	14	7.	3
	41	Males.		
	24	Females.		
10 Males	16 Males	8 Males.	4 Males.	3 Males.
9. Females	6. Fem^{s}.	6. Fem^{s}.	3 Females.	—

Ages of Children.

	5 and under.	5 to 10.	10 to 15.	
40.	4 Boys.	9. Boys.	8. Boys.	21 Boys.
	3. Girls	6. Girls.	10. Girls.	19. Girls.

Cardiac Disease among Males.

17 to 20	20 to 25.	25 to 30	30 to 40	40 +.
of 10. 7. 70%	of 16 11 68·7%	of 8 4. 50%	of 4. 2. 50%	of 3. 1.

25 out of 41
or a percentage of 60. 9.

Females.

17 to 20	20 to 25.	25 to 30	30 to 40	40 +.
of 9. 7.	of 6 3.	of 6 3.	of 3. 2.	0.

15 out of 24.
or a per. centage of 62·7.

Cardiac Disease among Children.

5 and under.	5 to 10.	10 to 15.
of 4 boys. 3	of 9 boys. 7.	of 8 boys. 6.
of 3 Girls. 3	of 6 Girls 5.	of 10 Girls 7.

16 Boys out of 21.
or a percentage of 76·1.

15 Girls out of 19.
or a percentage of 78·6

Relapses. among them 8 relapsed
or 19. 5 per Cent.
among women 3 relapsed
or 12·5 per Cent.
Of the 40 Children. 5 relapsed
or a percentage of 12·5.

I do not attach much importance to the Statistics of my cases, as they were drawn up as being originally, only of value to myself. They are of some interest however as concerning persons, young and old, who were attacked by the disease for the first time. It has to be remembered, that in the case of the men, I was dealing chiefly with Shipyard employés; men engaged in hard manual labours - boiler-makers, riveters, fitters, and Shipyard labourers; exposed in the majority of cases to all changes of weather, and living in great measure, in houses, the Sanitary arrangements of which are a disgrace to 19th century civilization.

As to age, that is given in the foregoing tables, and it is only interesting to note, that the oldest among them said he was 64 - indeed he looked older - He ran through a very acute attack which lasted for 19 days, and though I could not say that he had a very good heart to begin with, still I could not be positive that there was any actual valvular lesion present.

Early in the illness, however, there were developed signs of obstruction at the Aortic orifice, and also mitral incompetency. His temperature ranged about 102°F. for 10 days, and he made

made a good recovery. Unfortunately, about 4 months afterwards, he has a severe attack of influenza, complicated with acute bronchitis, and dies after 4 days illness.

I has no adult who shewed a temperature above 104° F. and the average was much lower. The average duration of the illness among the adults was 9 days – that is what might be termed the acute period. Convalescence was in most cases well established in 3 weeks, but restoration to a good state of health was very indefinite, as it must be after such an illness. Some who were ill, years ago, are not in a good state of health even now, and never have been, since they first had Rheumatic fever.

Relapses occurred in 8 of the men or a percentage of 19.5, and in women, 3 out of 24, or 12.5 per cent.

By relapse, I mean a well marked return of the arthritic affection, and in 2 of the men, the second attack brought mischief to the heart which has not been implicated in the earlier part of the illness. In these 2. the second attack was much more prolonged, and the temperature higher.

The 3. women who relapsed, has Endocarditis

during the first attack, and one of these had a pretty sharp pericarditis, in the first week of the relapse. The hammer made a good recovery and has no lung complication.
In the other two, the relapse was coincident with the advent of the menstrual flux.
Relapse, in the majority of the cases, occurred through indiscretion on their own part. The quick subsidence of the articular pain, under treatment; giving rise to an over confidence which cost both men mentioned above, dear.
In 3 others of the men, there was no apparent cause for the repetition of the illness, but I have noted my suspicions as to the diet.
There are never wanting those in any community, ever ready to prescribe for any bramble, and who would make one believe, that the only persons who know nothing of physic are physicians.
Unfortunately I have had these to deal with in my attendance on rheumatic, as well other affections, and among the working classes in their own homes, one cannot have too much confidence, that treatment is carried out as directed.
The very great difficulty in these cases of persuading patients to use the slipper and bed pan, and hygienic conditions, which make one almost

despair of bringing the sufferer through his illness with any degree of credit, have in my cases, I am persuaded, been the greatest drawback to achieving any very flattering results.

Heart Complications. With the exception of the two cases noted before, Endocarditis made its appearance in the first week, and very insidiously. In one or two cases I applied mustard plasters, over the heart, early in the illness, but I cannot say that the results were thereby improved much. Quite as many were, notwithstanding, affected by Endocarditis, as escaped.

Pericarditis occurred in 4 cases. Two were treated by blisters and two by the ice bag, and in all four the results were very favorable. I had no case of Pyo-pericardium. In one case, Act 40 in which valvular disease of the heart manifested itself, there was also pneumonia, which developed on the 3rd day of the illness. but ran a very favorable course, the patient turning the corner for health on the 10th day. It will be noted from the table of heart complications among men, that in those between 17, and 20, 7 out of 10 were affected or a per cent. of 40. and in those between 20 and 25, 11

11 or a percentage of 68.7. This is doubtless very high, but these were almost without exception young men employed at very heavy labors, and I suspect that the strain of work had somewhat injured their hearts already, and made them more susceptible to the poison.

One of these a young man of 22, - who, previous to his illness had enjoyed perfect health, and has a good family history, was seized with rheumatic fever a few months after I had passed him as a member of the Blacksmith's Society. His heart was then perfectly sound. Early in his illness, when the articular symptoms were excessively severe, he developed mitral incompetency - pericarditis came on about the 16th day, but subsided under treatment. There was no pulmonary complication. He relapsed time and again - no treatment seemed to suit him. Dropsy supervened, and though the amount of swelling yielded considerably at times, to diuretics, matters went from bad to worse, and without having recovered any, he died in less than 3 months, with his legs and body enormously distended with fluid.

I have noted further that in all those cases, 16 in number, in which the heart

escaped, treatment was begun very early. whereas, in 18 of the remaining 25. the disease was well pronounced, before medical advice was sought, delay being on the principle of waiting to see if matters would not improve.

Among Females, the heart was involved in 15 out of 24 cases. giving an actual percentage of 62.7.

As in the case of the men, the cardiac mischief revealed itself during the first 10 days. with one exception, a young woman of 27. in whom the joint affection was not very acute. In her case a mitral murmur shewed itself at the beginning of the 3rd week, and the joint symptoms persisted, with moderate exacerbations for over 5 weeks.

Pericarditis was present in only 1 case. There was considerable effusion, with a good deal of irregularity of the heart, and tendency to syncope, but she ultimately made a good recovery.

In 13 of the cases, mitral incompetency was the lesion present, Two had signs of obstruction at the Aortic opening, and in one of these, I was uncertain as to the presence of a mitral murmur as well.

Pulmonary Complications.

Pleurisy with moderate effusion, was present in 2 cases among the men, and pneumonia in 2. In the case of the latter, the amount of lung involved, was considerable, but all 4. did well. There was no case of Simple bronchitis, though slight bronchial catarrh was very common.

Among the women, 1. had pleurisy. She was a woman of 35 years, and had been delivered of twins shortly before her attack of rheumatic fever. Her family history was a good one, and she had apparently done well, up to a certain point. Delirium with her attendant. I was called to see her, and found considerable effusion in the right pleura, for which no treatment had been adopted. There was a rough murmur over the mitral valve, replacing the first Sound. She was still having Salicylate of Soda, and was very anaemic - Dyspnoea was very pronounced - indeed she could hardly bear to lie down at all. Her temperature was 103.6° at the time of my visit, and ruled rather higher in the evening. After a considerable attendance, the fluid became absorbed, and she did fairly well for a month, when active

mischief appeared at the base of the left lung, & rapidly got worse: had Sweating at night; and continuous fever ~~Saccating~~, but no haemoptysis.
The dies within 3 months of the onset of the rheumatic fever, of phthisis pulmonalis.
In one of the females had pneumonia, and Bronchitis was of less frequent occurrence than among the men.
Diarrhoea was present in the case of only 9. of the men, and 3. of the females. Any co-existence was rather that of Constipation.
In only 2. men, did I have an irritable Stomach to deal with, but both of these were able to take Salicylate of Soda, when combined with Small doses of Pulv. Doveri.
One of the females was four months pregnant at the time of attack. This however (the attack) had no effect upon her condition. Her boy was born at full time, and he never, to my knowledge, has had any rheumatic affection, and when examined 4½ years afterwards, his heart was perfectly Sound.
I had no adult affected with Chorea, and discovered Tendinous nodules on none during a first attack —

Notes on Children.

Among the 21 boys. 16 suffered from Endocarditis, or a percentage of 76.1.
The youngest I attended was 3 yrs. and architectus Symptoms were very slight. I was called to see him because of apparent pain when he was being dressed. The chief location of pain was the knee. which was a little inflamed. His temperature was 103. 4. 7. and examination on the 2nd day, revealed a soft blowing mitral murmur. His throat was a little inflamed, and he was quite disinclined for amusement. He speedily improved on alkaline treatment, and when I examined him a little over a year afterwards, the ~~heart~~ mitral incompetency was well marked and he was very anaemic and ill-nourished. The apex beat was then a little to the left of the nipple.
The boy who escaped heart mischief, I only saw 6 months after his illness, but so far as I could discover on repeated examination, there was no valvular lesion.
I had originally noted one of the boys between 5 and 10 yrs, as having escaped, but quite recently his mother brought him to me, as

as his father thought he was shirking School, for no reason. The boy is now about 15, and has affected about 4 years ago. He has complained recently of feeling giddy in the playground, and sickness, if he persisted in running about much. He also gets breathless and is much troubled with palpitation.

Examination revealed a well marked V.S. murmur over the mitral area, and an apex beat below and a little to the outside of the nipple. I examined the boy last about a year after his illness, and am positive he had no heart murmur. His mother informed me however, that he had growing pains when 12 years old, which I suspect was a return of his old complaint, which may then have excited an endocarditis.

Curiously, this boy's father has valvular disease of the heart. His eldest brother has it, and a Sister has it, all having had an attack of rheumatic fever, and under my care.

Seven and a half years ago, a little boy was under my care for scarlet fever of a mild type. He was progressing very favorably,

when in the Second week, he was attacked with rheumatic fever. His temperature ranged about 102° F. and the articular Symptoms were well marked. The heart was early implicated and at the end of the first week, after the appearance of the rheumatic affection, his temperature without any warning rose Suddenly to over 106° F. He was very much flushed, and delirious. His urine was slightly albuminous, but there was a good quantity being passed. I proposed the cold bath, but his parents would not Sanction it. I packed him in Cold Sheets, and though the temperature fell a little, it Speedily rose again, and the little fellow died the Same night, comatose, with the thermometer registering 107.4°. Whether this was simply Hyperpyrexia, or whether there was implication of the meninges of the brain, I never could determine. I am fully aware that hyperpyrexia is almost unknown, in early Childhood, but the case has always been a puzzle to me.

At one of the fits under 5, escaped heart-Complications, but nothing in the Symptoms arose to denote the untoward changes occurring within the Chest.

One of the little Girls was brought to me 2 years ago, with pronounced Chorea. She was then a little over 10. The heart murmur was very marked, but she has had no return of the arthritic complaint. There were no nodules, and she made a good recovery under Iron and, Arsenic.

Of those between 5 and 10 yrs. in the case of 2 of the boys and 3 of the Girls, there was a well ascertained history of hereditary predisposition. The worst of the boys has a history of rheumatism, on both parents' side, and 3 months after the first attack, I saw him for a pneumonic illness, when there were several nodules over the spinous processes, but in no other Situation. He has a well marked mitral murmur, and I regarded his ~~disease~~ indisposition as merely a further manifestation of his old trouble Another of the boys, has Chorea, 4 years after his first illness; when he was between 11 and 12 yrs. One of the Girls, aged 6. had pericarditis and pleurisy at the end of the second week. She was a Sickly anaemic Child, and her illness proved fatal; while one of the boys, who was 7 yrs. at the time of his rheumatic attack, died of phthisis one year afterwards.

One of the boys whom I had noted as having escaped Cardiac mischief, I examined not long ago, he being now over 15 years. His heart is quite sound, with the apex beat in its normal position. The other I have lost sight of, as also the girl.

Of the 18, between 10 and 15 years. Six had a family history of rheumatism, 4 boys and 2 girls. The fathers of two of the boys, had been under my own care, and had each valvular disease of the heart; while in the case of the girls, both parents of one had rheumatism some years ago and the mother had Chorea when a girl.

In only one of these girls did I find nodules, 5 these over the wrists, and one or two on the knuckles She had a bad mitral murmur, and has had rheumatic fever on two occasions.

Two of the girls have since had Chorea. The two boys, who escaped heart mischief were quite sound one year after their illness; the girls were also quite sound, but two of them had recent attacks, and one suffered from Cardiac mischief, while the other died of pulmonary trouble, the nature of which I have unfortunately not noted.

No one is more

conscious than myself, of the many imperfections contained in the foregoing pages, and I can only express the hope, that, under the indulgent consideration of those who have been my teachers, it may, as a record of a small part of my work here, be deemed worthy of the end for which it was written.

William St. Clair.